Sprint

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EX PARTE

March 13, 1996

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W. Room 222
Washington, D.C. 20554

RE: In the Matter of Price Cap Performance Review for Local Exchange Carriers
CC Docket No. 94-1

Dear Mr. Caton:

Today representatives of Sprint Corporation met with Messrs. Anthony Bush, Les Selzer, Steven Spaeth and Raj Kannan of the Common Carrier Bureau's Tariff Division to discuss Sprint's position on issues in the 4th Further Notice of Proposed Rulemaking in the above referenced docket. The attached describes the contents of the discussion.

Representing Sprint Corporation were Messrs. Jay C. Keithley, Jim Sichter, Pete Sywenki and Mark Askins. Sprint requests that this information be made a part of the record in this matter. Two copies of this letter, in accordance with Section 1.1206(a)(1), is provided for this purpose. If you have any questions, please feel free to call.

Sincerely,

Jay C. Keithley

Jay C. Keithley

Attachment

cc: Anthony Bush (w/o attachments)
Les Selzer (w/o attachments)
Steven Spaeth (w/o attachments)
Raj Kannan (w/o attachments)

Price Caps

94-1 4th Further Notice

Sprint

Overview

- Price Cap Formulas
- Input Price Differential
- Review and Modification of
  - USTA Study
  - AT&T Study
- Interstate Productivity Factor
- Rolling Average
- Sprint Proposal

Price Cap Formula Alternatives

1) Full Differential Method

$$dp^L = dp^N - (dTFP^L - dTFP^N) + (dw^L - dw^N)$$

where:

- d(·) = annual percentage change
- L = LEC
- N = National Economy
- p = output price
- w = input price
- TFP = Total Factor Productivity

Price Cap Formula Alternatives

2) Modified Differential Method

$$dp^L = dw^N - (dTFP^L - dTFP^N)$$

- Equivalent to the Full Differential method **<u>if and only if</u>**:

$$(dw^L - dw^N) = 0$$

i.e., There is no Input Price Differential

Price Cap Formula Alternatives

3) Direct Method

$$dp^L = dw^L - dTFP^L$$

- Advantages
  - Equivalent to the full differential equation, but requires 2 rather than 5 components
  - Deviations in measured TFP are offset exactly by equal deviations in input prices and vice-versa
  - Avoids any problems regarding method inconsistencies between industry specific and economy-wide TFP or input price measurement

Price Cap Formula Alternatives

- The Direct Method is Mathematically equivalent to the Full Differential Method
- Example (using AT&T's numbers)
  - full differential

$$dp^L = dp^N - (dTFP^L - dTFP^N) + (dw^L - dw^N)$$

$$\mathbf{-2.55\%} = 2.85\% - (3.01\% - 0.15\%) + (0.46\% - 3.00\%)$$

  - direct

$$dp^L = dw^L - dTFP^L$$

$$\mathbf{-2.55\%} = 0.46\% - 3.01\%$$

Input Price Differential

- Inherent differences between telecommunications and the economy as a whole
  - Relative Intensity of Factor Inputs
  - Composition of Materials Supplying Sectors
- Conclusion
  - Changes in prices paid by LECs for inputs will not equal the input prices for the economy as a whole unless merely by coincidence
  - **Any valid price cap formula must measure LEC input prices**

Input Price Differential

Comparison of Inputs to the Economy and Telecom

	Economy-Wide	Telecom
Factor Inputs (% of total)		
Capital	6%	22%
Materials	50%	37%
Labor	44%	41%
Material Supplying Sectors (top 5 suppliers and % of total materials supplied)	Construction 8% Retail Trade 7% Food 7% Education 5% Motor Vehicles 5%	Electronic Equip 16% Real Estate 9% Business Svcs 8% Depository Insts 7% Wholesl Trade 6%

Input Price Differential

Empirical Evidence (Cronin Study)

Year	Economy-Wide	Telecom	Difference
1985	3.1%		
1986	0.0%	2.0%	2.0%
1987	3.0%	1.0%	-2.0%
1988	3.9%	2.0%	-1.9%
1989	4.7%	1.9%	-2.8%
1990	3.6%	2.8%	-0.8%
1991	3.5%	1.9%	-1.6%
1992	2.5%	2.7%	0.2%
1993	2.5%	2.6%	0.1%
Average 86-93	**3.0%**	**2.1%**	**-0.9%**
Average 89-93	**3.4%**	**2.4%**	**-1.0%**

Input Price Measurement

Cronin Method

	Method of Measurement	Source
Capital	Capital consumption, i.e. the current value of capital consumed in the process of producing output. This measure most accurately reflects the amount of capital input consumed per unit of output and is the concept employed by the ICC in the rail's price cap formula.	BEA-Detailed Industry Wealth Data Diskette, September 13, 1994.
Material	Input-output double entry system , which is a two-dimensional representation of total economic activity that provides a tracking of the goods and services that individual sectors buy and sell to each other. Using this framework, fixed weight indices of material prices were calculated for the telecom sector.	BEA-Benchmark Input-Output Accounts of the US:1987; BLS Office of Employment Projections (output time series data)
Labor	The Total Compensation Employment Cost Index (ECI) for Transportation & Public Utilities (T&PU), which is a fixed-weight measure of the change in the cost of labor. The total compensation ECI was also benchmarked against the wages & salaries ECI and the BLS average hourly earnings for the telecommunications sector producing similar results.	BLS-Employment Cost Indexes and Levels, 1975-1993, September 1993, Table 7, pages 38, 44-45.

Summary of X-Factor Proposals

	USTA	AT&T	Ad Hoc
TFP Differential	2.8%	2.9%	3.2%
Input Price Differential	0.0%	2.5%	3.4%
Interstate Adjustment	0.0%	1.9%	2.8%
CPD	0.0%	1.5%	0.5%
X-Factor	2.8%	8.8%	9.9%

Review of USTA Study

- The "by-product" input prices from USTA's TFP measurement overstate LEC input price growth
  - Capital
    - Definition of capital cost results in a significant overweighting of this component
    - Inappropriate depreciation rates understate consumption
  - Materials
    - Use of GDPPI overstates materials price growth for LECs
  - Labor
    - Prices inappropriately influenced by OPEB accounting change

Modification of USTA Model

- Adjustments to USTA Model
  - Capital: Applied consumption definition and replaced Christensen depreciation with FCC depreciation rates
  - Materials: replaced GDPPI with telecom specific input price index
  - Labor: Removed influence of OPEBs
  - Also, changed common line output to be measured on lines instead of MOU to be consistent with per-line cap approach

Review of AT&T Study

- Model errors significantly overstate output growth of both state and interstate services
  - Price weight for interstate traffic sensitive (TS) erroneously calculated as TS rev req divided by residential access lines resulting in an overweighting of TS MOU growth
  - Intrastate toll output weighted using both inter and intraLATA revenue, but quantities include only interLATA usage
- The capital input price series is highly erratic and the author selectively employs a highly subjective "hedonic" adjustment that has absolutely no impact on the end result under the direct approach

Modification of AT&T Model

- Adjustments to AT&T Model
  - Fixed the error in TS output by dividing by MOU instead of residential access lines as the author clearly intended
  - Added intraLATA usage quantities to the interLATA quantities to be consistent with the revenue weighting
  - Removed "hedonic" adjustment (while this has no impact on the direct approach results, it is useful for the purpose of comparison to the USTA and Cronin input price series')

Comparison of TFP and Input Price Studies

	Unadjusted			Corrected			
	IP	TFP	PCI Adj Direct Method	IP	TFP	PCI Adj Direct Method	Cronin Input Prices
Norsworthy							
1985	13.44%	12.39%	1.05%	13.82%	11.29%	2.53%	
1986	5.38%	2.85%	2.53%	6.36%	3.17%	3.19%	2.04%
1987	-0.32%	1.40%	-1.72%	1.32%	2.11%	-0.79%	1.01%
1988	-6.54%	-2.65%	-3.89%	-4.89%	-2.46%	-2.43%	1.98%
1989	0.72%	5.90%	-5.18%	1.98%	5.59%	-3.61%	1.94%
1990	-4.15%	1.15%	-5.30%	-3.26%	0.37%	-3.63%	2.84%
1991	1.00%	4.26%	-3.26%	1.77%	4.13%	-2.36%	1.85%
1992	1.78%	3.45%	-1.67%	2.55%	3.73%	-1.18%	2.72%
1993	5.80%	7.31%	-1.51%	6.64%	7.07%	-0.43%	2.64%
1994	0.49%	3.44%	-2.95%	0.95%	2.77%	-1.82%	
91 - 94 Avg	2.27%	4.62%	-2.35%	2.98%	4.43%	**-1.45%**	
90 - 94 Avg	0.98%	3.92%	-2.94%	1.73%	3.62%	**-1.89%**	
85 - 94 Avg	1.76%	3.95%	-2.19%	2.72%	3.78%	**-1.06%**	
Christensen							
1989	-2.93%	1.75%	-4.68%	2.30%	0.98%	1.32%	1.94%
1990	3.69%	3.80%	-0.11%	3.18%	4.46%	-1.28%	2.84%
1991	3.54%	1.98%	1.56%	2.00%	2.08%	-0.08%	1.85%
1992	5.39%	3.56%	1.83%	2.40%	5.20%	-2.80%	2.72%
1993	5.14%	3.70%	1.44%	2.89%	4.61%	-1.72%	2.64%
1994	2.80%	2.45%	0.35%	2.59%	2.32%	0.27%	
91 - 94 Avg	4.22%	2.92%	1.30%	2.47%	3.55%	**-1.08%**	
90 - 94 Avg	4.11%	3.10%	1.01%	2.61%	3.73%	**-1.12%**	
89 - 94 Avg	2.94%	2.87%	0.07%	2.56%	3.28%	**-0.72%**	

Price Cap LEC ROR

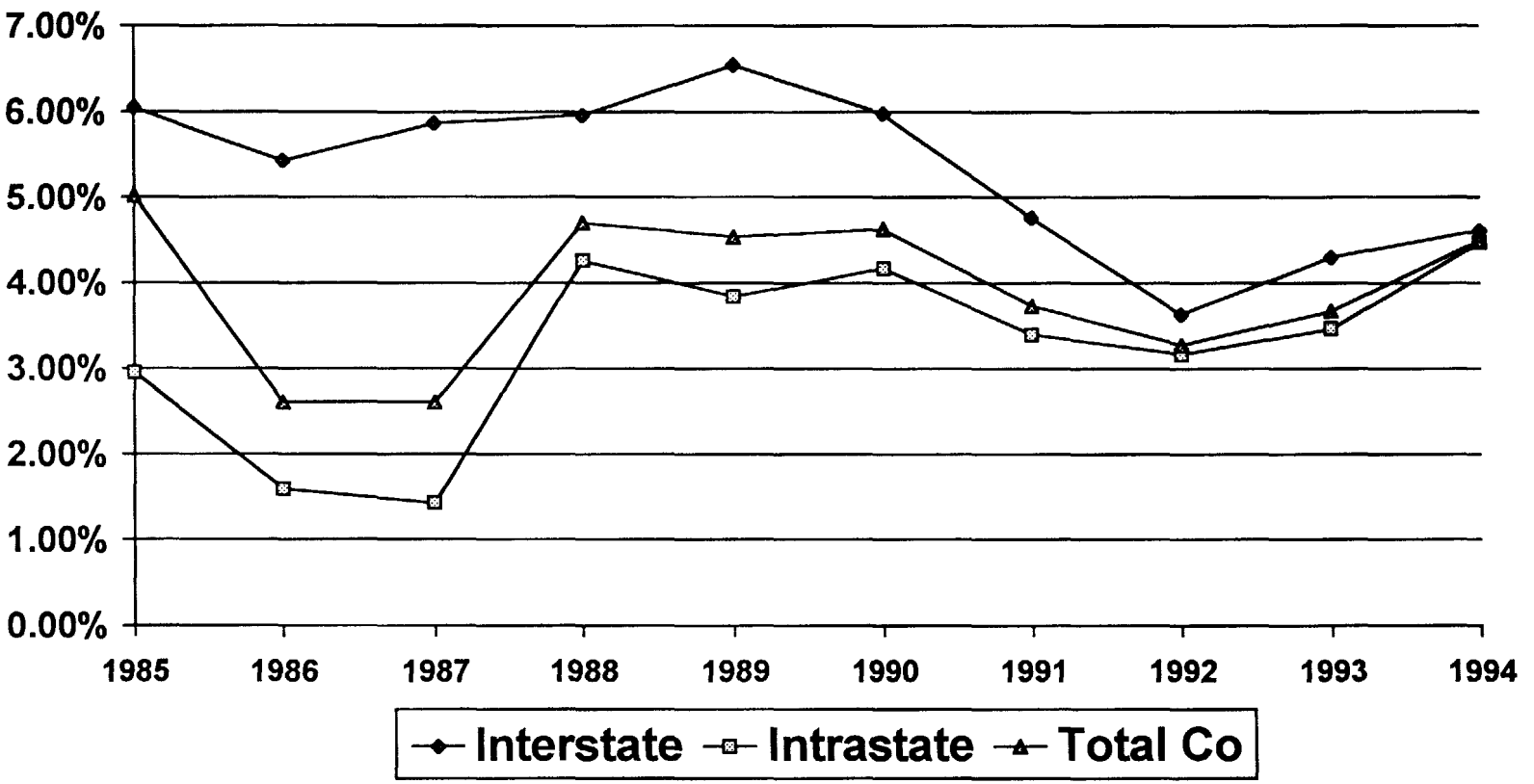
	1991	1992	1993	1994
Actual 492	11.67%	12.34%	12.92%	13.75%
AT&T 8.8% X-Factor	10.67%	9.17%	7.48%	5.69%
Ad Hoc 9.9% X-Factor	10.47%	8.54%	6.40%	4.07%

Interstate Productivity Factor

- Inputs inseparable
- State-Interstate Output growth differentials
  - Largely a function of pricing policies
    - SLCs, separations changes have driven high interstate growth rates
  - Differential is diminishing
- Any Interstate "contribution to TFP" additive should
  - Reflect current trends
  - Be relatively insensitive to rate restructuring (e.g., use marginal cost, not revenue or revenue requirement weights)

Output Growth

AT&T/Norsworthy Model (Adjusted)



Output Growth
AT&T/Norsworthy Model

	Total Interstate	Toll	Local	Total Intrastate	Total Company
Unadjusted					
Avg 85-94	6.83%	6.78%	3.03%	4.22%	4.90%
Avg 90-94	5.41%	6.85%	3.42%	4.45%	4.69%
Adjusted*					
Avg 85-94	5.23%	3.89%	3.03%	3.31%	3.81%
Avg 90-94	4.32%	4.08%	3.42%	3.62%	3.79%

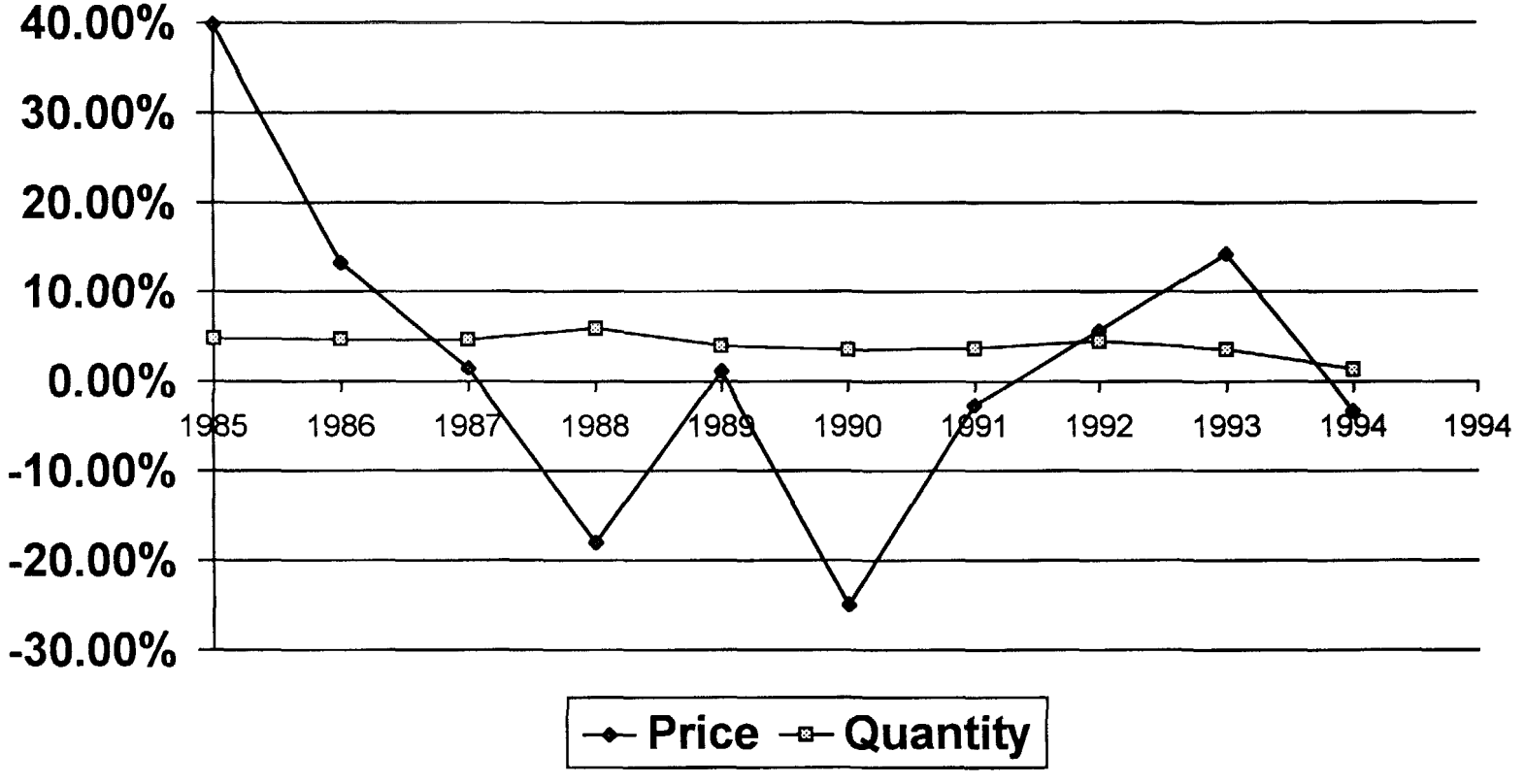
* Adjusted for:
1) Incorrect quantity used to develop Interstate Traffic Sens price series
2) Ommission of intraLATA usage from intrastate toll quantity

Potential Drawbacks to the Rolling Average Approach

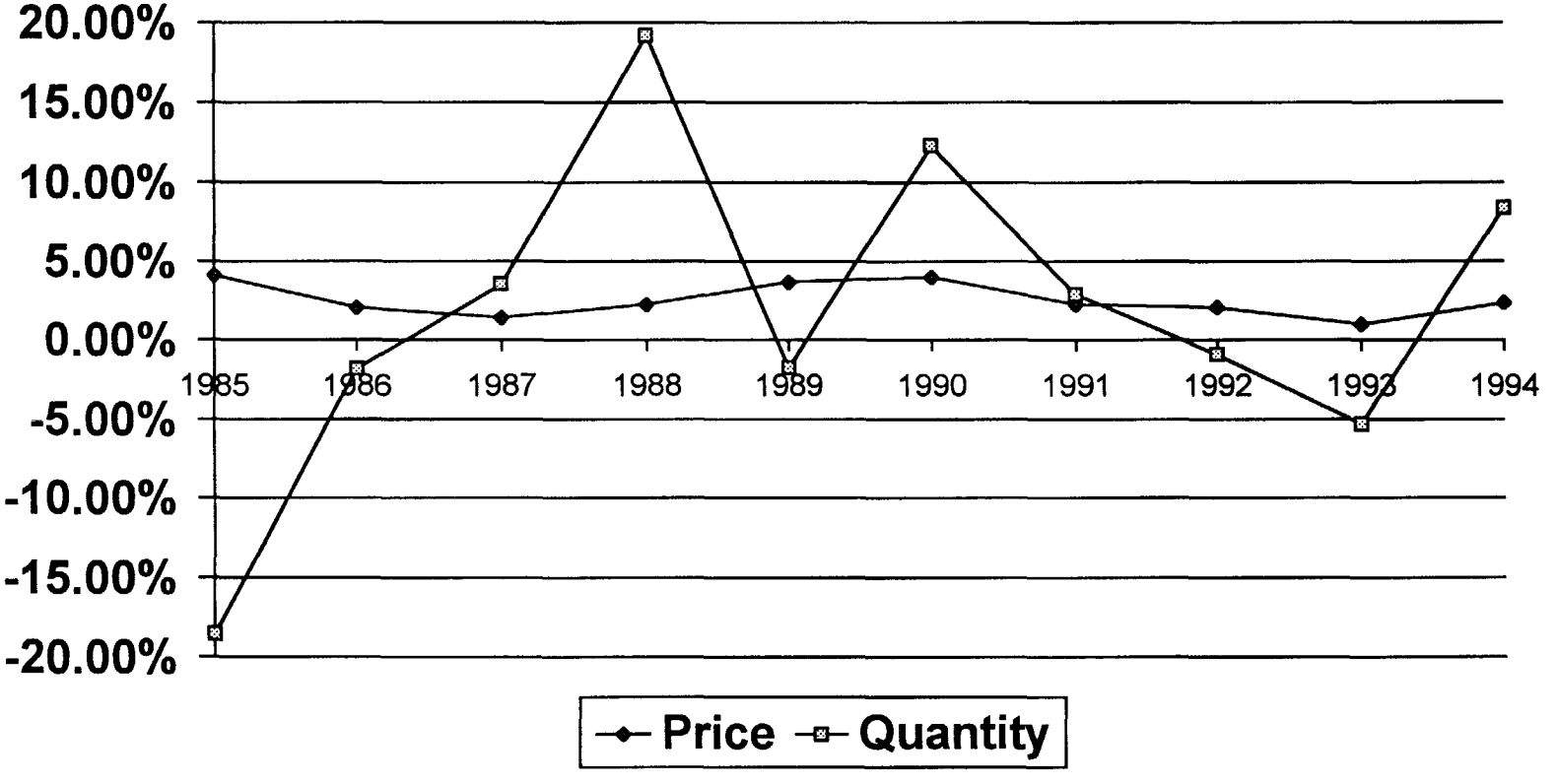
- Practicality (Simplicity and Verifiability)
  - Volatility
    - annual updates would be complex and controversial
- Usefulness (Economically Meaningful)
  - Trends
    - the advantage of a rolling average is that it would capture significant trends
    - None of the studies on the record evidence any clear trends in TFP growth or input price changes

Capital Input

Norsworthy Model



Material Input
Norsworthy Model



Labor Input

Norsworthy Model